

## A Sand Lance, *Ammodytes*, in the Coelom of a Weakfish, *Cynoscion*, with Earlier Records of Similar Phenomena

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(Plate I)

A CONSIDERABLE number of reports have been made on the occurrence of ophichthids in the body cavities of various fishes. These have been found in a mummified condition and invested in membranes which evidently developed as part of the fishes' reaction to foreign bodies. A summary of the reports on such cases has been given by Walters (1955.1) together with a history of thoughts expressed by various persons on the possible methods of entry. Such coelomic entry, it is believed, is accomplished after the eels have been swallowed, by means of their sharp, hard-pointed tails, which are normally used to burrow into sand and similar materials. This specialization is a boring tool of considerable power.

There are also a considerable number of reports on similar behavior on the part of *Ammodytes*. Here it is the sharp anterior end which is evidently used for such penetration. Actually the hard anterior point in these fishes is formed by the projecting sharp chin, and not the snout as is sometimes stated. All such reports till the present have involved the three commonest North Atlantic gadoids, the pollack, cod and haddock, either from New England waters or the North Sea.

The present case differs from the previous reports in that it concerns the sciaenid, *Cynoscion regalis* (Bloch & Schneider), and was taken in Delaware Bay, N. J.<sup>1</sup> The *Ammodytes americanus* De Kay measured 105 mm. and was found during the process of cleaning a weakfish weighing three-quarters of a pound, which had been caught commercially in Delaware Bay during July, 1955. The photograph and radiograph,

<sup>1</sup>Dr. Florence Wood, to whom we are indebted for this specimen, obtained it from a retail fish market in Avalon, N. J. The proprietor, Mr. George Heits, is also the source of the ophichthid reported by Breder (1953).

Plate I, make possible the certain identification. The sand lance was dry, shriveled, odorless and brownish in color, not unlike the ophichthid reported by Breder (1953). The preservation is not as good as in the latter, which may be merely a matter of longer entombment. This would be entirely possible because of the relatively small size of the *Ammodytes*. When the weakfish was less than half its size at capture, it could have swallowed the *Ammodytes*. The ophichthid noted above, in contrast, was very large in respect to the fish from which it was removed.

The only other fishes that have been reported to have found their way into the coeloms of larger fishes involved *Syngnathus* on two occasions. These accounts are general and rather vague as to details. Both evidently refer to the common *Syngnathus fuscus* Storer, although the North Carolinian case (see below) may involve one of its more southernly, but basically similar, relatives. While these fishes are certainly hard-bodied and angular they would not ordinarily be thought of as being "sharp" enough to puncture the wall of a gut. Evidently under exceptional circumstances this is possible. It is notable, nonetheless, that all three types of fishes could, *a priori*, be expected to present a hazard to a thin or damaged part of the intestinal tract. A consideration of the following annotated list of all such occurrences emphasizes this situation, as does the absence of hard-bodied but not slender fishes, and slender but not hard-bodied kinds.

The records of these fishes now stand as follows:

### Ophichthidae.

*Omochelys cruentifer* (Goode & Bean).

?In a *Pollachius virens* (Linnaeus). Massachusetts. Atwood (1859). This was merely described as an eel. Since Atwood

knew of *Ammodytes* in such situations it would seem most likely that this occurrence was an *Omochelys*.

In unidentified fish. North Atlantic. Goode & Bean (1895).

In *Centropristes striatus* (Linnaeus). New Jersey. Breder (1953). A.M.N.H. No. 20300.

*Ophichthus apicalis* (Bennett).

In *Serranus pantherinus* (Bleeker).

*Letherinus nebulosus* (Forskål).

*L. miniatus* (Schneider).

*Pristipomoides pristipoma* (Bleeker).

*Lutianus dodecacanthus* (Bleeker).

Unnamed lutianids. Ceylon. Deraniyagala (1932).

*Myrichthys acuminatus* (Gronow).

In *Promicrops itaiara* (Lichtenstein). Florida. Breder & Nigrelli (1934).

*Ophichthus* and *Apterichthys*.

In *Lophius piscatorius* Linnaeus. Eastern North Atlantic. It is questionable whether this is properly referable to present considerations. See Walters (1955.1). Suvorov (1948).

*Ophichthus ocellatus* (LeSueur).

In *Alphestes* sp. Bahamas. Walters (1955.1). A.M.N.H. No. 19902.

Syngnathidae.

*Syngnathus* sp.

In *Gadus callarias* Linnaeus. Massachusetts. Atwood (1857). Unidentified fish. North Carolina. Gudge (1922).

Ammodytidae.

Because of the confused status of the species and subspecies in this genus, it is impossible to be absolutely certain of the names applied below. See, for example, the remarks of Walters (1955.2). Hence the question marks, although the probability is great that the names are properly applied.

*Ammodytes americanus* DeKay ?

In *Gadus callarias*. Massachusetts. Atwood (1857 and 1868).

Bigelow & Welsh (1925) wrote, "Sand eels' noses are so sharp that when swallowed by cod, and perhaps other fish, they sometimes work right through the stomachs and into the body cavities of their captors, to become encysted in the body wall, but this must be an exceptional event for none of the fishermen of whom we have inquired have seen it,

nor have we." Bigelow & Schroeder (1952) repeat the statement but drop the phrase following the last comma.

In *Cynoscion regalis* (Block & Schneider). New Jersey. A.M.N.H. No. 20301.

*Ammodytes tobianus* Linnaeus ?

In *Melanogrammus aeglefinus* (Linnaeus). Scotland. Barrett (1885).

Three *Ammodytes* in a single fish in one instance. Williamson (1911).

*Gadus callarias*. Scotland.

*Pollachius virens*. Scotland. Williamson (1911).

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## EXPLANATION OF THE PLATE

## PLATE I.

*Ammodytes* from the coelom of a *Cynoscion*.

FIG. 1. The specimen as removed from the body cavity. A.M.N.H. No. 20301.

FIG. 2. Radiograph of the above specimen.